# SCOTT W. H. SEU

**BUSINESS ADDRESS:** Hawaiian Electric Company, Inc.
P. O. Box 2750
Honolulu, Hawaii 96840
Phone 543-7517

**CURRENT POSITION:** Manager, Energy Projects Department, Hawaiian Electric Company (HECO), Inc. Honolulu, Hawaii.

**PRIOR EXPERIENCE:**

2003 - 2004 Manager, Customer Installations Department, HECO. Oversaw the department in planning, design, and construction of electrical service projects for customers.

1998 - 2002 Manager, Environmental Department, HECO. Oversaw the department in administering the environmental permitting and compliance programs of HECO and its subsidiaries. Represented the Company to the public and regulatory agencies on environmental matters.

1997 - 1998 Principal Environmental Scientist, HECO. Supervised the Air Quality Division of the Environmental Department.

1993 - 1996 Senior Environmental Scientist, HECO. Managed air permitting of all new power generation projects for HECO.

1991 - 1993 Staff Environmental Engineer, Acurex Environmental Corporation, Mountain View, California. Provided consulting services on federal and state air quality regulations and emission control technology.

1989-1991 English Teacher, Sichuan University, China.

1988-1989 Mechanical Engineer, Westinghouse Electric Corporation, Sunnyvale, California.

**EDUCATION:**

Stanford University, Stanford, California.
MS Mechanical Engineering, 1988.
BS Mechanical Engineering, 1987.

Graduate, Kamehameha Schools.

Graduate courses in business administration, University of Hawaii, and in urban and regional planning, San Jose State University.

**PROFESSIONAL REGISTRATION:** Professional Engineer, mechanical branch (license no. 8844), State of Hawaii.

(2) (on one island) substation-sited peaking generation (i.e., HELCO's four dispersed 1 MW generators), (3) (in one instance) substation-sited generation to address a case-specific transmission problem (MECO's Hana generators), (4) commercial customer-sited generation for combined heat and power ("CHP") systems, (5) industrial customer-sited cogeneration, (6) off-grid, customer-sited generation for electricity power purposes, and (7) (to a limited extent) customer-sited generation, operated in parallel with the utility grid, for electricity power purposes only.

DG Technologies

DG technologies include conventional internal combustion engines ("ICE's") and combustion turbines, renewable technologies such as wind and photovoltaic ("PV") systems, and developing technologies such as fuel cells and microturbines.

CHP systems are a form of DG that utilize waste heat from the power generation process as energy (heat or steam) for heating or cooling purposes. The advantage of a CHP system over conventional electric generating units is the increased efficiency obtained when the captured waste heat is put to useful purposes. The thermal efficiency of fuel usage typically ranges from 85 to 90% for a CHP system compared to 35 to 40% for conventional central station generating units.

ICEs are the most mature and proven DG technology and have been used for decades for emergency power, standby power, peaking, cycling, baseload, and cogeneration applications. ICEs are suited for DG applications because of their small capacities, low capital cost, high efficiency, quick startup, high reliability, fuel flexibility, and cycling capability. However, some disadvantages associated with ICEs are air emissions, noise, and maintenance. ICEs are operated with fuel oils or natural gas. In

Hawaii, diesel fuel, propane or liquefied petroleum gas ("LPG"), and synthetic natural gas (in areas served by the gas utility distribution pipeline system) can be used for ICEs in DG applications. The choice of fuel is driven by economic and permitting conditions.

Microturbines are developing DG technology that is just beginning to be commercially available. Microturbines are generally less than 100kW in size and are targeted for emergency power, standby power, peaking, cycling, baseload, and cogeneration applications. Microturbines are suited for DG applications because of their compact size, low emissions, and cycling capability. However, some major disadvantages associated with microturbines are the low efficiency, unproven reliability, noise and high costs. Microturbines are being developed to use a variety of fuels, primarily natural gas, propane, diesel, methanol, bio-gasses, and gasoline. In Hawaii, diesel, propane, and synthetic natural gas would be the most logical fuel choices because of their availability and relative cost.

Fuel cells are devices that electrochemically convert energy from fuel gases such as hydrogen, natural gas, or vaporized special-duty propane directly into electricity. When fuels other than pure hydrogen are used, a fuel processing system, called a reformer, is required to convert fossil fuels such as natural gas, propane, light distillates, methanol, or biogas into hydrogen-rich gas. In Hawaii, synthetic natural gas or HD-5 grade propane would need to be used.

In general, fuel cell power plants are characterized by high efficiency, minimal emissions, little noise, and small land requirements. Fuel cells, however, are still in the development and testing phase, and the cost of using existing technologies would be

high, assuming that the fuel cells were available in sufficient quantities and the fuel infrastructure requirements could be met.

Fuel cell technologies are under various stages of development. (Commercial production of phosphoric acid fuel cells has now been discontinued.) There remain a number of key issues that need to be overcome before commercialization of the various fuel cell technologies can occur, including successful scale-up, manufacturing costs, durability, and reliability. Until the commercial products are released and significant field experience is obtained, the cost and performance values could change.

With respect to renewable energy, PV systems (often combined with battery energy storage) are a proven, commercially available technology. However, there are few installations without government, foundation or utility support. Larger installations in Hawaii generally have been supported by grants or the utilities (e.g., the Companies' Sunpower for Schools Program). There are few installations on grid-connected homes despite the support through State tax credits and the utility net energy metering tariffs.

Wind generation using wind turbine generators ("WTG's") is another proven, commercially available technology. Wind farms that supply electricity to the utility grid appear to be economically feasible, with the availability of State tax credits (and, perhaps, federal production tax credits). There have been customer-sited installations (e.g., Lalamilo was sited at a BWS well site on the Big Island), but these installations may also be driven by the ability to sell "excess" electricity to the electric grid. It remains to be seen whether small, customer-sited WTG installations are economically feasible, taking into consideration costs and siting constraints.

Summary Table of DG Technologies and Requested Data:

| | ICEs | CTs | Microturbines | Fuel Cells | PV | Wind |
|---|---|---|---|---|---|---|
| Fuel Types | Diesel<br>Propane<br>SNG | Diesel<br>Propane<br>SNG | Diesel<br>Propane<br>SNG | Propane<br>SNG | n/a | n/a |
| Efficiency | 8,955 Btu/kWh<br>~ 11,000 Btu/kWh<br>9,780 Btu/kWh | 11,882 to<br>14,741 Btu/kWh<br>ISO on Natural Gas | 13,700 Btu/kWh<br><br>12,200 Btu/kWh | | | |
| Land Use | Low | Low | Low | Low | Medium<br>5 to 10 acres per MW | High<br>6 to 20 acres per MW |
| Air Emissions | NOx: 1.2 - 6.9 g/bhp-hr<br>CO: 2.1 - 2.3 g/bhp-hr<br>HC: 0.12 g/bhp-hr<br>PM: 0.038 g/bhp/hr | | | | n/a | |
| Noise | 69 dbA at 3 meters<br>using acoustical<br>enclosure | | 65 dbA at 10 meters<br>using acoustical<br>enclosure | | n/a | |
| Water | Closed Cooling<br>Water System | Closed Cooling<br>Water System | Air<br>cooled | | n/a | n/a |
| By-Products | Waste oil<br>Waste cooling water | Waste oil<br>Waste cooling water | | | n/a | n/a |
| Capital Costs | ~ $1,000/kW for DG<br>~1,600/kW for CHP | | ~ $1,776/kW<br>for liquid fuel<br>in 8-unit container | | $10,000 to<br>$13,000/kW<br>installed | $1,700 to<br>$2,300/kW<br>installed |
| O&M Costs | FOM and VOM<br>$18 to $20 / MWh | | | | FOM $26 to $58/kW per year<br>VOM $0.13 to $30/MWh | FOM $80 to $270/kW per year<br>VOM $2.60 to $5.40 /MWh |
| Applications | Emergency power<br>DG/CHP applications | Emergency power<br>DG/CHP applications | DG/CHP<br>applications | DG/CHP<br>applications | Daytime / as-available<br>power | As-available<br>power |
| Reliability | 91% | 91% | ~ 80%<br>for liquid fuels | | ~ 45%<br>24-hour day availability | ~ 95%<br>when the wind is blowing |

HECO-102
DOCKET NO. 03-0371
PAGE 1 OF 1

CA-SOP-IR-5
DOCKET NO. 03-0371
PAGE 3 OF 8

# Distributed Generation Services

Search

Links
- District Energy Services
- District Cooling
- Thermal Energy Storage
- Contact Us Form
- E-mail

Related Content
- Infrastructure Rental
- Multi-Family Partnership Program
- Outdoor Lighting Services

## On-site Power Production Is More Feasible Today than Ever Before

Small-scale technologies such as micro turbines, combustion turbines, and fuel cells are used at or on a site close to your business. These small modular power generation units generate electricity at your site while using the Austin Energy power grid as back up.

## Services Provided by Austin Energy

After an initial site assessment to determine your needs, our Energy Products team installs, operates and maintains the latest versions of micro turbines, fuel cells, combustion turbines, and interconnecting switchgear necessary to equip your building for distributed generation. This service may be a cost-effective enhancement to your electrical service provided by Austin Energy.

## Benefits of Distributed Generation and Building Cooling - Heating - Power (CHP)

### Higher productivity for your facility

- Minimize disruptions and downtime that are inherent in any large electrical distribution system.
- Displace the need for diesel back up generators.
- Enhance reliability by having two sources for power— the distributed generation and Austin Energy grid.
- Ready and low cost source for heating your facility by capturing hot exhaust gases from the distributed generation equipment.
- Meet cooling needs by using exhaust heat as fuel for absorption cooling.

### Environmental credits

- Distributed generation systems are inherently clean and support better air quality in Austin.

# District Energy Services

Search

Links

- District Cooling
- Thermal Energy Storage
- Distributed Generation
- Contact Us Form
- E-mail

Related Content

- Infrastructure Rental
- Multi-Family Partnership Program
- Outdoor Lighting Services

## On-site Energy Infrastructure to Meet Significant Energy Needs

Our community fosters a growing infrastructure of high tech industries, commercial office buildings, universities and other modern complexes. As the need for high reliability grows, district energy systems present a smart and secure option.

Austin Energy offers district cooling, thermal energy storage, and distributive generation services to companies seeking alternatives to traditional power generation.

## Customer Solution to Meet Your Energy Needs

District Energy Services allows you to focus on your core business while Austin Energy, your local energy provider, manages your energy costs. Why not redirect your energy budget into a revenue-generating asset?

Learn more about:

**District Energy Services**

- **District Cooling**
- **Thermal Energy Storage**
- **Distributed Generation and Building Cooling - Heating - Power (CHP)**

 

*Our mission is to provide extraordinary customer service, affordable and reliable energy, environmental leadership and exceptional value for our customers.*

# About Us

Austin Energy is a community-owned electric utility and a department of the City of Austin. Our goal is to provide you with world-class customer service.

## National Night Out

Help make your neighborhood safe.
Host a crime prevention party, Tuesday, August 3, 2004.
Registration Information >>

## Newsroom

Strategic Plan emphasizes reliability, customer service, cost effectiveness, positioning for technology and greater generation diversity.
View Plan >>

## Employment Opportunities

Wide range of professional, technical and administrative positions.
Find a Job >>

## Power Plants

A diverse mix of power for the Austin community.
More Information >>

## HECO IRP-3 CHP Forecast - With Utility CHP
## Total Market Annual Potential

| | Total kW [1] | Units | Utility | | 3rd Party | |
|---|---|---|---|---|---|---|
| | | | Units | kW | Units | kW |
| 2003 | 300 | 1 | 0 | 0 | 1 | 300 |
| 2004 | 161 | 1 | 1 | 161 | 0 | 0 |
| 2005 | 7190 | 12 | 11 | 6690 | 1 | 500 |
| 2006 | 8200 | 11 | 10 | 7700 | 1 | 500 |
| 2007 | 8900 | 12 | 10 | 7900 | 2 | 1000 |
| 2008 | 9400 | 14 | 12 | 8400 | 2 | 1000 |
| 2009 | 8700 | 12 | 10 | 7700 | 2 | 1000 |
| 2010 | 3000 | 6 | 5 | 2500 | 1 | 500 |
| 2011 | 2700 | 6 | 4 | 2000 | 2 | 700 |
| 2012 | 2200 | 5 | 3 | 1600 | 2 | 600 |
| 2013 | 2200 | 5 | 3 | 1600 | 2 | 600 |
| 2014 | 1700 | 4 | 2 | 1100 | 2 | 600 |
| 2015 | 1700 | 4 | 2 | 1100 | 2 | 600 |
| 2016 | 1700 | 4 | 2 | 1100 | 2 | 600 |
| 2017 | 1550 | 3 | 2 | 1000 | 1 | 550 |
| 2018 | 1550 | 3 | 2 | 1000 | 1 | 550 |
| 2019 | 1200 | 3 | 2 | 735 | 1 | 465 |
| 2020 | 1068 | 3 | 2 | 735 | 1 | 333 |
| 2021 | 866 | 3 | 2 | 433 | 1 | 433 |
| 2022 | 1067 | 2 | 1 | 667 | 1 | 400 |
| 2023 | 866 | 3 | 2 | 433 | 1 | 433 |
| 2024 | 1067 | 2 | 1 | 667 | 1 | 400 |
| 2025 | 866 | 3 | 2 | 433 | 1 | 433 |
| 2026 | 1067 | 2 | 1 | 667 | 1 | 400 |
| Total | 68918 | 123 | 92 | 56321 | 31 | 12597 |

[1] Includes utility and 3rd party CHP
Source: IRP CHP Technical Committee

# APPENDIX B

## PART I

## CUSTOMER COMMENTS REGARDING UTILITY OFFERING OF CHP

The Company made requests to a few of its potential customers to briefly indicate why they want the Company to offer CHP services. Comments were received from the following:

- Outrigger Hotels & Resorts (attached as page 2)
- Mauna Kea Beach Hotel/Hapuna Beach Prince Hotel (attached as page 3)
- Hawaiian Building Maintenance, Manger of Harbor Court (attached as page 4)
- Grand Wailea Resort, Hotel & Spa (attached as pages 5 and 6)

**From:** Sakamoto, Dan
**Sent:** Thursday, July 24, 2003 4:59 PM
**To:** McQuain, Rick; Waller, Dave
**Cc:** Lee, Richard E.-Energy Service
**Subject:** FW: CHP Efforts

Received from David Lee of Outrigger.
-----Original Message-----
**From:** Dave Lee [mailto:dave.lee@outrigger.com]
**Sent:** Thursday, July 24, 2003 3:45 PM
**To:** Sakamoto, Dan
**Subject:** RE: CHP Efforts

Aloha Dan,

Outrigger supports HECO, MECO, and HELCO in their efforts to engage in the business of installing utility-owned combined heat and power systems (CHP) at customer sites. We understand their venture into this business would give customers such as Outrigger, another choice if and when we choose to engage this technology. There are many choices of CHP Vendors and HECO, MECO, and HELCO would just be another vendor from which we could choose. I remember discussing the potential of CHP applications with you and HECO engineers at the annual HECO conference held at Waikoloa two years ago. In that discussion were representatives from several Hotel companies and all parties encouraged HECO to consider entering into the CHP business.

Mahalo,

Dave Lee,
Vice President, Property Services
Outrigger Hotels & Resorts

MAUNA KEA BEACH HOTEL
ISLAND OF HAWAII

HAPUNA BEACH PRINCE HOTEL
ISLAND OF HAWAII

July 28th, 2003

Mr. Warren Lee, President
Hawaii Electric Light Company
1200 Kilauea Avenue
Hilo, HI 96720-4295

Dear Warren:

When I learned about a complaint letter sent to the Public Utilities Commission objecting to HELCO cogeneration installations, I wanted to send a letter of support.

My experience is that the most effective technologies and greatest energy savings, result from working closely together and in partnership with HELCO. Whether we are investigating installation of heat pumps, new chillers, solar thermal, ozone, or cogeneration, HELCO provides an independent perspective and needed advice on cost effective technologies. HELCO provides a broader perspective to help us find the best combination of products to reduce energy costs compared to machinery vendors promoting their specific product.

I think it is important that our resorts have options for HELCO cogeneration installations, in addition to other competitor's products. Options for HELCO installed cogeneration will maximize competition in the marketplace and increase the number of cogeneration installations. We would be more inclined to consider cogeneration if we get HELCO's guidance on the technology and see their presence in the marketplace.

Thank you for working together with us through the years. Please let me know if I can be of any further assistance supporting your cogeneration installations.

Sincerely Yours,

Melvin J. Perreira
Mauna Kea Beach Hotel, Director of Engineering
Hapuna Beach Price Hotel, Interim Director of Engineering

cc: David Cattle, HELCO Commercial Account Manager

62-100 Mauna Kea Beach Drive, Kohala Coast, Hawaii 96743 • Telephone 808.882.7222 • Facsimile 808.882.5700

Hawaiian
BUILDING MAINTENANCE
1164 BISHOP STREET, STE 1111 • HONOLULU, HI 96813
PHONE (808) 537-4561 • FAX (808) 531-6946

July 25, 2003

Mr. David Kaneshiro
Commercial Accounts Manager
Hawaiian Electric Company
220 South King Street
Honolulu, HI 96813

RE: Hawaiian Electric's Company Combined Heat and Power Efforts (Cogeneration)

Aloha David,

Hawaiian Building Maintenance (HBM) strongly supports Hawaiian Electric's efforts to enter into the distributed cogeneration market at customer owned sites. The participation by HECO in the cogeneration market would increase the competitiveness of the market place and provide customers with the ability to compare counter proposals. Additionally, HECO's entrance into the cogeneration market brings strength of presence that mainland vendors lack.

Aloha

Douglas Rauch
Chief Engineer
Hawaiian Building Maintenance

Grand Wailea Resort
HOTEL & SPA
Maui, Hawaii

July 23, 2003

Ed Reinhardt
President
Maui Electric Company, LTD
PO Box 398
Kahului, HI 96733-6898

Aloha Ed;

I have reviewed the complaint letter dated July 9, 2003 against Hawaiian Electric Company, INC. alleging that HECO, HELCO, and MECO have made unauthorized representations and offers to their potential customers.

I would like to relate my experience and involvement in regards to the MECO Combined Heat and Power project completed here in December 2002.

In my position as Director of Engineering here at the Grand Wailea Resort Hotel & Spa I am responsible for the oversight of utility use and costs. Being a very large property we need to be constantly aware of our usage patterns, actual costs of utilities, and have a complete understanding of how we can conserve and contain these costs.

I have been given a mandate by our corporate office to have a very strong understanding of demand side management opportunities and to implement energy saving practices and projects into the property.

I have been interested in Distributed Generation and Combined Heat and Power technology for many years now (several years prior to my taking my current position). I participated and networked at seminars sponsored by the State of Hawaii, and EPRI (sponsored by HECO). In June 2001 as an officer in the HHA State Engineers Council I toured the HESS CH&P installation at Mauna Lani Resort on the Island of Hawaii. The Gas Company sponsored the presentation for our HHA group. The installation was impressive and the benefits to the Resort were obvious. The drawbacks that I saw were the fact that there was a difficult situation between the utility company and HESS/ Mauna Lani Resort. I also felt that despite the benefits I did not want to be in the power generation business.

I started soliciting feasibility studies from companies offering CH&P. In the summer of 2001 I met with representatives of HESS Corporation (with the Gas Company INC) and

3850 Wailea Alanui, Wailea, Maui, Hawaii 96753
Guest phone: 808-875-1234 Fax: 808-879-4077 Toll free reservations: 800-888-6100
Sales & Marketing: 808-874-2422 Fax: 808-874-2411 email: info@grandwailea.com web site: http://www.grandwailea.com

American Energy Savings Company (out of Los Angeles, California). These site visits produced one proposal from American Energy Savings Company (which not feasible from a business sense for us here at GWR), and no proposal or follow-up from the HESS Microgen representatives.

In January of 2002 I was approached by your MECO Customer Service representatives Earl Ifuku and Brian Kealoha and presented with an opportunity to participate in a pilot project for our Bistro Molokini pool heating facility. To me this project was a great fit for the property and a chance to finally participate in a Distributed Generation project.

We have had good experiences working with MECO on other energy efficiency projects and they have shown their commitment to offer solutions in the best interest of our property. MECO is the expert in the power generation business, and has on-island support 24 hours a day, 7 days a week. I was glad that MECO was interested in offering CH&P. A local and reliable provider is important to us here at the Grand Wailea and for the hospitality industry as a whole.

Our corporate offices reviewed the project and an agreement was executed in the spring of 2002. The unit was successfully installed and started in December of 2002.

I have been in Engineering Management for 12 years and have been involved in numerous large projects. I was very impressed with the professionalism of the HECO and MECO management and staff, as well as their Project Management team and subcontractors in the implementation of this CH&P unit.

I hope that MECO will continue to pursue program approval with the PUC in light of the recent complaint letter. I look forward to the opportunity of working with MECO to install a second CH&P unit on our property.

If I can provide any more information regarding this issue please contact me at the GWR Engineering Department (808) 874-2320.

Sincerely,

Robert Hoonan
Director of Engineering
Grand Wailea Resort, Hotel & Spa

cc: Johnny So
Don Mehling

2. Hess Packaged Systems

The estimated cost of acquiring and installing the CHP systems to be offered under the CHP Program is based on the economies obtained by using packaged CHP systems manufactured by Hess[15], and the use of Hess' experience in designing and installing customer-sited CHP systems pursuant to the Teaming Agreement between the Companies and Hess, a copy of which is included in Exhibit D to this Application.

a. Hess

Hess approached the Companies about a possible partnering arrangement as early as the spring of 2001. Initially, the Company resisted the Hess offer in favor of taking more time to evaluate the developing CHP market. In November 2002, Hess again approached the Companies for a teaming arrangement because:

- Hess preferred to sell equipment, rather than operate and maintain installed equipment.
- As a mainland-based company, Hess had some problems in addressing operating and maintenance issues. On the maintenance side, these included maintaining a dedicated, trained workforce on all islands with installations.
- Hess' national clients in the hotel, grocery, and other industries wanted Hess to install CHP systems in Hawaii. Local customer representatives

---

The Companies would only be reimbursed for the actual cost of the fuel provided.

[15] There will be certain circumstances where facility constraints do not permit such an installation. In those cases, the system will be manufactured, integrated and tested at Hess before being disassembled

(e.g., operating engineers) wanted the utility to own, operate and maintain the CHP systems. Both Hess and the utility saw an opportunity to meet the needs of their customers.

- Hess saw an opportunity to substantially expand the market for CHP systems in Hawaii if the utility offered CHP.

Hess has some customers with a national account who have facilities in Hawaii. These customers are pressing Hess to implement CHP systems at those facilities. In particular, Starwood Properties is aggressively pursuing CHP systems. For the reasons noted above, coupled with the fact that Hawaii's high electricity costs favor the development of CHP systems, Hess approached the Companies to establish a teaming agreement. Hess believes that Hawaii represents a substantial CHP market if the Companies participate in it.

b. Packaging Concept

The Companies considered a number of vendors before deciding that the Hess equipment met the needs of most situations and was the most cost effective. A key to teaming with one vendor is management of project costs. The specific requirements in most projects can be met by a wide variety of equipment. There is generally not sufficient technical differentiation between the performance of internal combustion engines of the same size to clearly favor one vendor over another.

The differentiator in favor of Hess was the packaging concept developed by Hess,

---

for shipment to the customer's site.

which dramatically reduces field construction costs. The use of common equipment also provides for more uniform and consistent designs and thereby significantly reduces maintenance requirements and costs. The design approach followed by Hess for its packaged systems is significantly more cost effective than that followed by most of the competitors in the business. Hess utilizes an array of standard components and prepares a design by selecting the appropriate standard components from that array. This does not necessarily lead to the absolute highest efficiency, but it is very cost effective. The Companies found that many vendors incur additional costs attempting to refine designs that have to be field assembled and adjusted.

Hess offers skid mounted, pre-wired, pre-piped, and factory tested combined heat and power systems. This concept reduces on-site construction time and disruption as well as start-up problems. Hess performs thorough factory tests and evaluation of individual components and the total system for reliability and value.

The entire Hess system (not just components) is UL[16] approved. Other vendors have not taken the time nor the effort to pursue this test program. Although focused on safety, the UL approval provides a level of quality assurance to both the utility and the customer.

c. Other Hess Capabilities

In addition, the Companies took into consideration the proven capabilities of Hess with regard to the specific tasks that are part of the development and operation of a CHP

[16] Underwriters Laboratories, Inc. (UL) is an independent, not-for-profit product safety testing and

system in Hawaii, which allows the Companies to tap into that expertise when needed. These tasks include:

- Conduct project feasibility analysis
- Refine project design/engineering
- Permitting
- Fuel supply arrangements
- Project financing
- Equipment supply/contracting
- Construction management
- O&M services

3. CHP System O&M

a. Operations

CHP Systems are designed for predominantly automatic operations once the initial checkout and system balancing are completed. The CHP system protective devices are generally set to shut down the units in the event of a problem to protect the equipment from damage. Depending upon the nature of the problem, the unit may be restarted remotely or it may be necessary for an operator to check out the CHP system before restarting. The Hess design includes extensive remote monitoring capability. The Companies intend to take advantage of that capability and monitor the units from a central location on Maui. Each of the utility dispatch centers will also have monitoring

---

certification organization and has tested products for public safety for more than a century.